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8 June 1979

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WEST

EUROPE

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TRANSLATIONS ON WESTERN EUROPE

(FOUO 35/79)

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TRANSLATIONS ON WESTERN EUROPE

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COUNTRY SECTION FRANCE

AIGRAIN INTERVIEWED ON STEPS TO ENCOURAGE INNOVATION

Paris L'EXPANSION in French Apr 79 pp 34-35, 39

[Interview with Pierre Aigrain, secretary of state to the prime minister in charge of research, by Jean-Francois Rouge]

> [Text] Pierre Aigrain, 54 years old, has conducted all types of research: university (at the College de France, MIT [expansion unknown]), industrial (AEC [Atomic Energy Commission], Thomson) and governmental: for 5 years he has headed the General Directorate for Scientific and Technical Research (DGRST) and today occupies a government post for organizing scientific research. In this capacity, this month he will present a general plan aimed at giving a new impetus to French research and to reorganizing its industrial relations.

L'EXPANSION: Is there a French lag in research, particularly in comparison to Germany and Japan?

PIERRE AIGRAIN: I don't believe it's possible to speak of an overall lag. However, it may be said that there are sectoral lags.

Actually, the research effort started much earlier in France than in Germany or Japan. The years 1958 to 1969 were the great expansionist period of French research. This began about 1965 in Germany and about 1960 in Japan. But growth was less rapid. At one time, around 1970, we were even in the lead. Germany and Japan have now caught up with us and if the French effort does not move faster, they will quickly surpass us.

It is a different matter with the United States. They carry out nearly half of the research conducted worldwide. Their problem is mainly one of disseminating the results of their own research down the line; the problem of the Germans, French and Japanese is one of disseminating the results of world research in a practical form to their sectors down the line.

The Germans and Japanese are doing that better than we are.

L'EXPANSION: Is it serious that the ratio of gross national expenditures for research to the PIB [Gross Domestic Product] has declined from 2.15 percent in 1967 to 1.79 percent in 1977?

PIERRE AIGRAIN: I wouldn't say that it's tragic, but it mustn't continue. In 1967, Germany's ratio was reportedly about 1.6 percent. It is currently 2.2 percent and we have moved to 1.8 percent. We are actually living on our laurels.

L'EXPANSION: Have you taken measures not to repeat certain mistakes of the past (the Calculator Plan, etc.)?

PIERRE AIGRAIN: With industrial development programs, it is always a matter of finding a solvent potential market. Of course, long-term research must be carried out. But I can't guarantee--and no one can--that our effort in controlled thermonuclear fusion, for example, will one day have a solvent market.

Often 40 years go by between a discovery's proof of feasibility and production. Let's take the case of fission energy: proof of feasibility was secured in 1939 when Joliot and Kovarski showed that a chain reaction was possible. Forty years later, nuclear energy still represents only a small part of the total energy supply. It would not have been possible to go much faster.

I still believe that conducting these basic studies is the right thing to do; otherwise, a possible path of development would be closed. On the other hand, in the development stage of a product, the decision must be based above all on profitability, the existence of a market and our ability to take the lead fairly. I believe that this is now a well-established concept in government and industrial decision-making processes.

L'EXPANSION: How is our foreign balance of trade developing in terms of patents?

PIERRE AIGRAIN: My personal estimate is that our balance is negative and that it is continuing to deteriorate, particularly in relation to other developed countries. This is disturbing, not because of the amount of money involved (that is not what will jeopardize the balance of payments), but it is nevertheless a disturbing sign.

L'EXPANSION: Chancellor Schmidt said recently: "Patents and technology will account for 90 percent of Germany's exports in 1980." And France?

PIERRE AIGRAIN: Chancellor Schmidt was thinking not only of exports of patents or turnkey plants, but also of exports of products for which the competitive ability of German companies was linked to their technology. France will still not be at that stage by 1980. We will have to reach that figure about 1985 at the latest.

L'EXPANSION: Does a closer relationship between research and industry imply a change in the mentality of researchers?

PIERRE AIGRAIN: Yes, but especially a change in the attitude of PMI [Small and Medium-Size Industries]. Even if a small business does not have the means to acquire a fine laboratory, it is almost always able to obtain two things: on one hand, consultation and researchers working in a laboratory (particularly in public laboratories, which have access to world knowledge); that's not very expensive. On the other hand, a small internal research unit which can also serve as a discussion unit. It can also subcontract abroad, in public or special research facilities, even (as in Germany) with large businesses which have research laboratories and can contract for their use.

It is not a question of asking PME [Small and Medium-Size Businesses] to allocate 25 percent of their turnover for research-development. It is a question of broadening their way of thinking.

L'EXPANSION: In that connection, there has been talk of "cross-fertilization" between research and industry . . .

PIERRE AIGRAIN: Article 27 of the CNRS [National Center for Scientific Research] statute on researchers authorizes them to take a leave of absence, with their agreement of course, for a research project in a private company. That rarely happens. It is both the fault of businesses (although they are in the process of changing: currently there are many requests for contracts) and researchers themselves. Out of sight, out of mind: the researcher on leave is afraid of being forgotten in terms of promotion. We have therefore made the decision to modify the DGRST's level of participation in research contracts concluded with industry on the basis of the policy practiced by the company. Secondly, we are considering automatically paying a better salary to researchers who will have been on leave.

L'EXPANSION: Are you considering the creation of other bridges between research and industry?

PIERRE AIGRAIN: Yes, but I still don't believe that public research laboratories must be transformed into agencies for industrial research. First, because they would do a poor job, for lack of market contacts; second, because they would no longer conduct basic research. We are still not carrying out enough basic research.

Conversely, an industrial problem can advantageously motivate basic research. Brewers who had been making beer since the time of the Gauls, discovered at the end of the 19th century that they did not understand the process of fermentation. So they went to Pasteur. He realized that it was not so much a problem of organic chemistry--his specialty at the time--but of microbiology. That motivation led him to the discovery which is now well known. That doesn't mean that he abandoned basic research.

Thus we are trying to set up criteria, committees, commissions, etc. And also to promote personal contacts (the most effective of all) . . .

L'EXPANSION: Seventy-five percent of public financing for research goes to about 8 percent of business enterprises. Is this normal?

PIERRE AIGRAIN: It isn't scandalous, inasmuch as those same businesses represent much more than 75 percent of expenditures for research. What is unsatisfactory is the fact that the research efforts of PMI are also weak. The solution may be through increased government aid, aid which can also take very varied forms.

L'EXPANSION: Have you considered specific forms of aid?

PIERRE AIGRAIN: We are at least considering a "universal information office," to which businesses could always turn and which could possibly inform them and help them to obtain aid. Studies are underway to determine whether it is necessary to set up indirect or automatic aid criteria--which do not exist in France, contrary to what is being done in some neighboring countries, particularly Germany.

L'EXPANSION: There is a lot of talk about "doomed" sectors. In your opinion, what are the sectors of the future for PME?

PIERRE AIGRAIN: Determining a potential market, discovering the world's potentially solvent and poorly satisfied needs, that is the main role of business. It is, I would say, its "true basis for trade"! Therefore, it is not for the government to replace it in seeking new market openings.

If I may venture a few examples, however, I will say that scientific instrumentation (biological or medical) represents a considerable market opening for PMI. That may also force them to make certain rearrangements, for marketing and after-sales services . . . Another example, this time with the public at large as an outlet: the prodigious development of sports equipment. Rossignol and Salomon are PME which have succeeded in this field. But we are absent from the market for other sports equipment, whereas the sector is really very innovative.

L'EXPANSION: As a preview, can you tell us what kind of measures will be decided in the April Council of Ministers meeting devoted to innovation?

PIERRE AIGRAIN: These measures will be two-fold: access of businesses (particularly small businesses) to research results and government aid (automatic, fiscal or indirect procedures); and as a result, adaptation of the necessary administrative structures.

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CSO: 3100

SUCCESS IN TIPPING TRADE SCALES NOTED

London THE MIDDLE EAST in English May 79, pp 115-116

[Text]

The French Government's persistent efforts to reduce imports of Arab oil and redress the substantial trade deficit with Arab countries have begun to bear fruit. Following a trend set in 1977, French exports have continued to expand while the value of its imports from these countries has largely remained the same.

Even though first estimates of last year's Franco-Arab trade flow indicate that France's deficit was reduced by about $1billion, it was still over the $3billion mark ($1 = app 4.4 French francs). The reduction is more likely to be an indirect result of the decline in the value of the dollar than a significantly improved export performance.

Within the Arab world France has been doggedly attempting over the past decade, but especially since the 1973 OPEC oil-price rise, to reorient its trade away from its traditional partners in the Maghreb towards the more rapidly expanding economies in the Middle East. According to French Trade Ministry officials, the Government's policy has been to "concentrate on the markets of those countries with which we have a trade deficit (*see table*) as a result of our oil imports".

French exports to countries of the Arab League represent 10 per cent of its total exports. Of this figure, more than 40% is still with its former colonies in North Africa: Algeria, Tunisia and Morocco. When exports to Libya are added, the total is more than 50 per cent of French exports to the Arab world.

This firmly rooted phenomenon tends to demonstrate that, in the intense competition with other industrial powers, France has had only limited success in its effort to penetrate the Middle Eastern markets.

Reasons put forward for this mediocre showing include the lack of price competitiveness caused by France's dated industrial infrastructure and hesitation to open up operations in countries usually considered to be in the Anglo-Saxon sphere of influence *(See Managerial Round Table)*. Added to this, the language barrier and a lack of knowledge of the exact needs of Middle Eastern markets have meant that French business has continued to rely on its "captive markets" which date from the colonial period.

In both Tunisia and Morocco, France is the leading trading partner. Nonetheless, the clouded future facing these troubled economies has put a damper on French export possibilities. French industrialists were particularly upset by the austerity programme announced by King Hassan in June 1978 which limited the import of certain products and generally cut capital spending during the present three-year plan. What more, other European countries, notably West Germany and Italy, have been elbowing their way into this previously French domain.

As for Algeria, which represents by far France's largest Arab customer with over 20 per cent of its Arab-oriented exports in 1978, political differences have impelled the Algerian Government to seek new commercial partners. The United States replaced France in 1976 as Algeria's main market. This trend is likely to continue given the number of long-term LNG contracts with Washington.

An unofficial freeze on new contracts with French firms in 1976 and 1977 was a serious blow to French interests. It quickly took its toll on the value of new contracts signed between the two countries. For instance, new contracts plummeted from about 7 billion French francs (approx. $1.6 billion) in 1975 to 1.5 billion FF in 1976 and 2 billion FF in 1977. Official figures have yet to be published for 1978 but it is generally expected that the figure will not reach the 2 billion FF mark.

However, economic relations now seem to have entered calmer waters. An unmistakable sign of this detente was the awarding of a major contract – the first for 30 months – to the French firm Technip for the construction of the third gas-liquefaction plant (LNG 3) at the Arzew complex in north-western Algeria. The choice of the Teal liquefaction process was a major victory for the French in the intense competition which they wage against American multi-nationals in the petroleum and gas-producing countries.

FRENCH TRADE WITH ARAB COUNTRIES
('000 French Francs)

	1977	1978 (est)
Morocco	+ 2,575	+ *1,956*
Algeria	+ 4,902	+ *3,735*
Tunisia	+ 1,683	+ *2,539*
Libya	+ 433	+ *694*
Egypt	+ 1,644	+ *2,109*
Sudan	+ 177	+ *96*
Mauritania	+ 244	+ *80*
Somalia	+ 34	+ *28*
Lebanon	+ 797	+ *818*
Syria	+ 309	+ *275*
Iraq	- 6,788	- *7,271*
Jordan	+ 217	+ *214*
Saudi Arabia	-18,134	-*14,473*
Kuwait	- 933	- *262*
Bahrain	+ 91	+ *106*
Qatar	- 1,253	- *1,878*
UAE	- 4,928	- *3,674*
Oman	- 216	+ *67*
North Yemen	+ 156	+ *379*
South Yemen	+ 40	+ *83*
TOTAL	18,950	-14,379

An analysis of Franco-Arab trade figures reveals that Paris has a positive trade balance with 15 states of the Arab League and a deficit with only five. In fact the 1978 trade deficit of 14.3 billion FF (about $3.4 billion) largely coincides with its trade deficit with Saudi Arabia (14.4 billion FF). That is the reason why French trade officials stress that "Saudi Arabia is our biggest supplier (of oil), and consequently we have made a particular effort there".

French exports to Saudi Arabia have more than doubled over the past two years, testifying to the activity of French firms there. Still Saudi Arabia accounted for only 1.14 per cent of total French exports in 1978 a figure which places it just ahead of a small country like the Ivory Coast (1.11 per cent). In addition, industrial newcomers such as South Korea, Taiwan and Pakistan can be favourably compared with France on the list of Saudi Arabian suppliers.

Ways of increasing the French share of the lucrative Saudi market were discussed during King Khaled's state visit to France in June 1978. So far only 12 French firms have permanent representatives in Saudi Arabia and French businessmen are often accused of paying scant attention to the way business is conducted in that country. As latecomers to the Saudi scene, many French companies have to join US ventures if they are to succeed in winning big construction contracts.

French projects in petrochemicals, power generation, telecommunications, computers and solar energy are in the pipeline. Yet so far it is only with military equipment that Paris has marked up an unquestionable success. The Saudis sought to diversify their sources of armaments to reduce dependency on Washington, and France was a natural alternative.

Saudi Arabia has purchased over one thousand tanks and armoured vehicles of the AMX variety. The French firm COFRAS is in charge of setting up and managing a school for mechanics and tank drivers. Saudi Arabia also purchased 38 Mirage 111 fighter bombers which were put at Egypt's disposal. Government circles in Paris have high hopes of placing their new generation of jet fighters, the Mirage 2000 and 4000, with the Saudi Air Force. The huge figure of $3.5 billion for various arms deals with Saudi Arabia was advanced by the French press during King Khaled's 1978 visit. Until now there has been no official confirmation or denial. Saudi Arabia has also paid for French arms sold to Sudan, Morocco and Mauritania.

Another aspect of the emerging Franco-Saudi relationship is the financial backing given to Paris by the recycling of petro-dollars in French financial markets. Even though Paris takes a back seat to New York and London on this score, the Saudis are reported to have placed several billion dollars in France and this partly explains the franc's relative resilience in recent months.

The businessman most identified with direct Arab, and in particular Saudi investment in France is the Syrian-born Saudi national Akram Ojjeh, head of the Techniques d'Avant-Garde (TAG) group. He has established himself in the French business world in a remarkably short period. The group's holdings in France are diversified: office buildings, 44 per cent of the equity of the regional airline Air Alpes, 10 per cent of the public works firm Dumez, 25 per cent of Lignes Télégraphiques et Téléphoniques and five per cent of the bank Crédit Commercial de France. The total of the group's French assets is thought to be over 1 billion FF. Furthermore, the group has purchased 60 Dassault Falcon Jets worth 1.2 million FF.

A fervent francophile, Ojjeh provides his services to French companies intent on establishing themselves in the highly competitive Saudi market. For the moment, French officials do not seem to be worried about the Saudi investments in the country managed by TAG. But in any case TAG has judiciously avoided investing in strategic sectors of the economy.

France, like other Western countries, had been counting on the Iranian market to absorb some of its oil-import deficit. Iran was France's best Middle Eastern customer because of the $4 billion contract for the sale of two 900-MW nuclear power plants and uranium fuel for 10 years. One of the first acts of the new Iranian Government was to cancel this deal as well as to scale down the initial order for the Franco-German Airbus commercial airliner.

This was a major blow to French trade and a setback for these key sectors of the economy. French officials and businessmen were all the more disappointed since Ayatollah Khomeini had been given asylum in the country for four months before his triumphal return to Iran.

The French Minister of Foreign Trade, Jean-François Deniau, paid a visit to Iraq in February to help to stimulate French exports with a view to cutting the large trade deficit (7.2 billion FF in 1978). In 1978 France signed new contracts to a value of only 350 million FF, compared with 1 billion FF in 1977. France has lost a lot of ground in this country over recent years to Japanese, Italian, and even Spanish, competitors *(see The Middle East survey on Iraq, No 52, p107)*. Again in the domain of military supplies France has been able to hold its own: military contracts totalled some 700 million FF in 1977 and over 1 billion FF in 1978.

France has not really succeeded in placing its goods and services in the smaller countries of the Gulf. For example in the United Arab Emirates the share of France in the local import market in 1977, some 2.8 per cent, placed it behind all the major industrial countries. Even India, with 4.4 per cent made a better showing. In Kuwait, France did a bit better with 5.2 per cent.

The new French Foreign Minister, Jean François-Poncet, made a tour of the region at the end of 1978 to stimulate French exports French companies seem less reluctant than their British and American counterparts to tackle the political and economic complications involved in the Egyptian market. French firms have won important contracts for telephone equipment and dredging work on the Suez Canal. In March 1979 it was learnt that a group of French firms had signed a contract to prepare an integrated programme for the reconstruction of Egypt's devastated Red Sea province.

Now it appears that French business is striving to establish a new form of relationship with the Arab world which goes beyond the simple salesman-customer tie. Instead of turnkey sales, certain sectors of the French business community are seeking a new associate type of relationship. They envisage joint operations in Arab countries and other Third World states which would facilitate the smooth alliance of Arab capital and French technology. □

CSO: 3120

COUNTRY SECTION FRANCE

HABIB-DELONCLE INTERVIEWED ON TRADE RELATIONS

London THE MIDDLE EAST in English May 79, pp-110-119

[Interview with Michel Habib Deloncle, president of Franco-Arab Chamber of Commerce]

[Text]

Michel Habib-Deloncle, who was a minister under General de Gaulle, is now President of the Franco-Arab Chamber of Commerce. He spoke to *The Middle East* about the progress of Franco-Arab trade relations.

□ **Can you briefly describe the scope of the Franco-Arab Chamber of Commerce's (CCFA) activities?**

○ The principal role of the Franco-Arab Chamber of Commerce is to encourage and aid the development of commercial, industrial and trade relations between France and all the countries of the Arab world. In order to achieve this goal, bilateral sections – one for each Arab country – organise special study sessions. These gatherings are attended by ministers or senior civil servants and businessmen from the countries concerned. We also send out study and information missions every year to all the Arab states.

The Chamber of Commerce also sponsors conferences and symposiums. As an example of this type of activity I can mention the 1976 symposium held in Marseilles on "The Imbalance of Franco-Maghreb Commercial Relations", the Khartoum symposium in 1978 concerning "Agricultural Development and Agro-Industrial Activities" and our next one, scheduled for the end of May in Amman, on "Professional Training and the Transfer of Technology".

In addition, the CCFA publishes a yearbook, a fortnightly bulletin and a bimonthly magazine in both French and Arabic. The French edition informs French firms of the possibilities offered in Arab markets, keeps them up-to-date on commercial, fiscal and social legislation in these countries, and reports on their different development plans as well as annual budgets. The Arabic edition informs our Arab friends on the varied aspects of the French economy, both by sector of activity and by region. Moreover, they are kept up-to-date on the holding of different trade fairs and on more specialised branch activities which are going on in France.

The Chamber of Commerce, which is organised on an equal-representation basis, is an organisation which favours the exchange of information and facilitates personal contacts between the French and Arabs.

□ **In the Arab world France has had an excellent reputation ever since General de Gaulle changed the course of the country's foreign policy in the Middle East in 1967. Does this help French corporations in winning contracts in Arab countries?**

○ Yes, in the sense that French companies have been able to demonstrate their dynamism and measure up to the stiff competition in the Arab markets. In the economic sphere, a political "honeymoon" can only play a secondary role.

□ **In 1978 Paris ranked behind Japan in global trade figures and behind West Germany for exports. How do you account for this relative decline in the French position?**

○ France was more severely hit than West Germany and Japan by the world economic crisis. French corporations have more difficulty in coming to grips with the imperatives of competition in these markets, which, by the way, has been intensified by the arrival of still more partners.

□ **France seems to be able to place its military equipment more easily than other goods and services in the Middle East. How do you explain this fact?**

○ Given France's policy of non-alignment and its position in the Arab-Israeli conflict, it is looked upon by countries in the Middle East as a supplier of arms because purchasing military equipment "made in France" does not imply any political concessions. This factor does not apply to non-military goods.

□ **What role does trade with the Middle Eastern countries have in France's global economic strategy?**

○ France is heavily dependent on the Near East for its crude oil supplies, and therefore for the smooth functioning of its economy. While diversifying its energy sources, it is normal that France seeks the closest possible co-operation with the countries of this region and attempts to provide the advanced technology needed to fulfill their development needs. President Valery Giscard d'Estaing suggested a form of trilateral co-operation between Europe, Africa and countries of the Arab League that is in line with this policy.

□ **During the past few years political relations between Algiers and Paris have deteriorated. What effect has this had on economic ties between the two countries?**

○ The tense atmosphere in Franco-Algerian relations has been gradually lessening since the spring of 1978. This trend was confirmed by the signature of contracts between the Algerian state hydrocarbon company, Sonatrach, and the Franco-Italian consortium of Technip-ENI. The first contract, for a total of 356 million FF, involves engineering work and the supplying of nine liquefaction equipments for the third liquefied and natural gas (LNG 3) plant at Arzew. The second contract dealt with the financing of the liquefaction facilities at this plant as well as other goods and services. This contract totals 2.5 billion FF and is in the form of buyer's credits and a $400 million loan on market terms. These two credit arrangements, as you know, were arranged by French banking syndicates: the first one was headed by the Banque de Paris et des Pays Bas (Paribas) and the second by the Banque Nationale de Paris (BNP).

In any case, Franco-Algerian co-operation is a historical and geographical necessity which will certainly carry the day in spite of the ups and downs in their bilateral relations.

□ **The French trade deficit vis-a-vis the Arab countries is especially the result of its crude oil imports from Saudi Arabia, Iraq, Qatar and the UAE, but France does not seem able to make a major commercial breakthrough here.**

○ France is but one of the developed countries. On the industrial front France has to compete against Japan, West Germany, and the United States. Therefore, we are able to win only part of this market. Nonetheless, it is already a rather considerable share especially when you take into consideration the fact that we arrived in these markets much later than most of the other countries.

□ **In 1978 France imported 52% of its crude oil from Saudi Arabia and Iraq. What effect does the concentration of French oil sources in the Middle East have on its policies?**

○ The French have been making efforts to diversify their sources of energy supply. For instance, President Giscard d'Estaing was recently in Mexico and the managing director of the state-controlled oil company, Société Nationale d'Elf-Aquitaine (SNEA), Albin Chalandon, paid a visit to Venezuela. However, we have great confidence in our friendship with oil-producing Arab countries, not to speak of the keen sense of responsibility which they have shown.

□ **How do you envisage the future of Franco-Arab co-operation in the economic domain?**

○ The methods of Franco-Arab co-operation are necessarily different in respect to the political regime and the specific characteristics of the countries involved. Let's take as an example the recent economic and technical co-operation agreement signed with Iraq on 20 February. Iraq undertook to boost its crude oil exports to France by more than 25 per cent in 1979. As for the French Government, it agreed to participate in the establishment in Iraq of a number of research centres for solar energy

and nuclear power as well as the realisation of a project for the liquefaction of natural gas. In the framework of these projects, Iraq expressed its willingness to link the importation of French technology to the training of Iraqi technicians in France. Another example of Franco-Arab co-operation is the mutual interest taken by France and Qatar in the field of petrochemicals.

There were also several expositions of French products in the Emirates and elsewhere in the Gulf. I can give you several examples: the Island of Beauty Cruise in 1976 and the Marco Polo operations launched by the Limousin-Poitou-Charentes local Chamber of Commerce in Dubai and Doha in 1976 and 1978. By the same token, in collaboration with the French UTA airlines, a week-long exposition of French products is to be organised in Bahrain in 1980.

Different missions of the CCFA and the Centre Français du Commerce Extérieur, more specialised and technical in nature, pay annual visits to the Gulf Emirates. Our Chamber of Commerce in 1977 organised a trip for 30 French businessmen to Bahrain and the UAE: In 1978 we sponsored another one, this time to Kuwait, Qatar and Oman. We intend to organise a study and information session during the Paris Trade Fair when the Bahrain and UAE pavilions are inaugurated. □

CSO: 3120

COUNTRY SECTION FRANCE

JAGUAR MAY GET SFENA AUTOMATIC PILOT

Paris AIR & COSMOS in French 21 Apr 79 p 29

[Article by Gerard Collin: "Automatic Sfena Pilot on Jaguar Soon?"]

[Text] Back in 1977, Dassault-Breguet was developing an automatic pilot system for the Jaguar aircraft or, more specifically, a pilot assistant system. Several months later, General Fleurot confirmed Air Force interest in this kind of aid to piloting, permitting the pilot "to let go of the stick for several minutes in an area of limited flight," the purpose being "to give the pilot a little more comfort during the all-weather missions he is called upon to fly."

The idea thus is to come up with a "simple" or "minimum" automatic pilot for the Jaguar aircraft, with the following necessary modes having been defined in this context:

For guidance in depth, the mode of longitudinal flying trim maintenance and the altitude maintenance mode;

For warp guidance, the course maintenance mode.

Besides, the equipment should provide warp trim aid for the aircraft as well as a trim function in depth, this time entirely automatic.

SFENA [French Air Navigational Equipment Company] was charged, on a contract basis, with developing prototype equipment for this automatic pilot which was to be simple, as compared to equipment intended for aircraft such as the export version of the Mirage F1 or the Mirage 2000.

Improvement at Minimum Cost

To make the integration of an automatic pilot into an already existing aircraft coherent with the operational and economic objectives, it seemed necessary to limit the possible costs involved in the redefinition of other equipment on the Jaguar. Hence, a simple formula was selected: The orders for the SFENA automatic pilot are simply superposed upon those

already existing on the level of the output of the aircraft's autostabilization modules (see diagram below). We are dealing here with three Smith axes modules, with electrical-hydraulic servocontrols although their course used by the autostabilizers is reduced. When the limits of this course [run] are attained, the SFENA system triggers the depth trim function or tells the pilot to activate the warp trim. For this purpose, the pilot pushes the manual trim button which is already in place on the stick (SAMM [Moving Machinery Applications Company]).

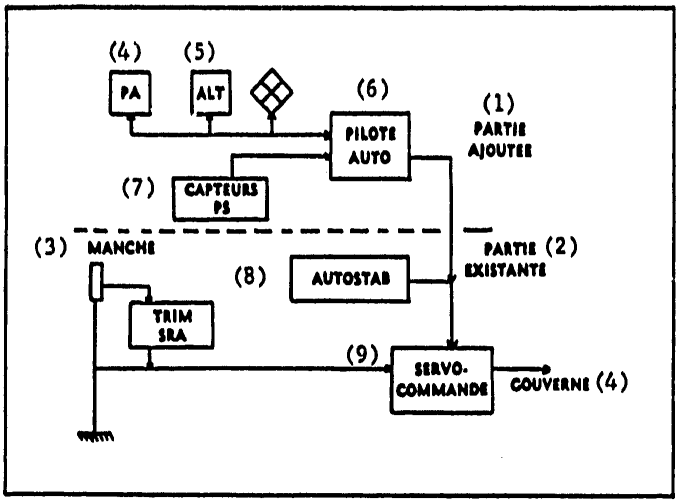
Automatic pilot operating control is assured by three dials which will be placed on the right portion of the instrument panel. The first dial, the "PA" [automatic pilot] dial, serves to trigger the automatic pilot, in its basic modes [heading, flying trim, trims]. The second dial, the "ALT" dial--compared to the preceding one--exchanges the base mode of flying trim maintenance against the higher mode of altitude maintenance. The third dial is a kind of domino with four sectors (see diagram). The sectors on the left and the right tell the pilot the desired direction of the warp trim. The upper and lower sectors tell the pilot about an anomaly in the automatic depth trim..

The controls are supplemented by fast triggering and re-triggering push buttons, located directly on the stick. But here again, the engineers started with the controls already installed on the aircraft in order not to increase the aircraft modification costs any further. Overall, SFENA thus supplies the following: The computer properly speaking (4 kilograms), the three dials, two static pressure detector probes for the altitude maintenance mode.

The system of course has some synthetic safeties (speed, amplitude limits) covering the entire chain (computer, shock absorbers, balancing planes). The automatic pilot is disconnected the moment the pilot resumes control of the aircraft (detectors at foot of stick).

Flight Tests Scheduled for November 1979

A first prototype of the automatic pilot is being tested on the test bench of SAMM at Vernon. Flight tests are scheduled for this coming November on a Jaguar, of course, For the moment, no final decision has been made by the Air Force. In case of a positive decision, the series should get started in 1981, a time at which we would thus be starting the reequipment of aircraft, a formula that might also be of interest to other Jaguar users.



Simplified Automatic Pilot Operating Diagram on "Depth" Channel. The portion above the broken line represents the system developed by SFENA. Key: 1--added portion; 2--existing portion; 3--stick; 4--control surface; 4--automatic pilot [dial]; 5--altitude [dial]; 6--autopilot; 7--static pressure detector; 8--autostabilizer; 9--servocontrol.

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CSO: 3100

COUNTRY SECTION FRANCE

JAGUARS EQUIPPED WITH OMERA-40 CAMERA

Paris AIR & COSMOS in French 21 Apr 79 p 29

[Text] Certain Jaguar aircraft of the Air Force are equipped with an Omera panoramic camera, type 40. Installed under the nose of the aircraft, it makes it possible to take horizon-to-horizon pictures over a field of 180°. The camera uses a double-perforation 70-mm film producing images with a format of 57 mm x 249 mm, contained in a 75-m magazine. The pictures are taken at a speed of 2-10 images per second, with an objective of 75 mm and an exposure time of 1/100 to 1/10,000 second, with running compensation. The camera's standard operating altitude is between 3,000 and 20,000 ft. It weighs 18 kg and is supplied with power at 28 v.

In addition to the Jaguar aircraft, this camera is installed on the Mirage III R D, Mirage III R, and Mirage F1 Export (pod) aircraft.

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LASER-GUIDED MISSILES FOR JAGUAR, MIRAGE 2000

Paris AIR & COSMOS in French 21 Apr 79 p 31

[Article by Pierre Langereux: "Laser-Guided Weapons for Jaguar and Mirage 2000"]

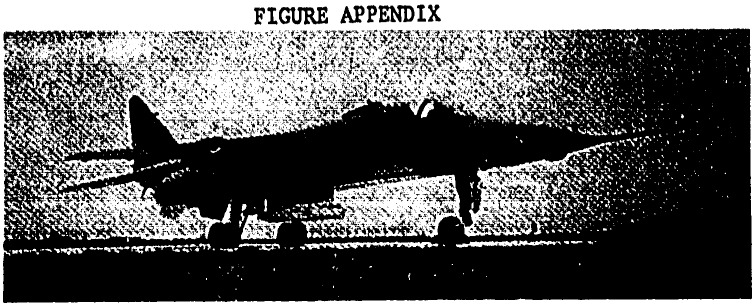
[Text] The French Air Force will undoubtedly be the first in the world to be able to equip its single-seat aircraft with a fire control and automatic target designation pod, using laser beams. At the end of 1978, the agencies concerned started the series production of the "ATLIS 2" pod developed in cooperation by Thomson CSF (France) and Martin Marietta (U.S.A.) to equip the single-seat Jaguar and Mirage 2000 at the start of the eighties. These aircraft will thus be able to fire the "AS 30 Laser" ground-to-air missile of Aerospatiale (range 10-12 km) and the 100-mm rocket of Thomson-Brandt (range 1-6 km), equipped with an "Ariel" automatic laser guidance unit by Thomson-CSF, as well as the future 1,000-kg bomb with laser head, derived from the "Ariel" (THOMSON -CSF also developed a laser range finder, the TMV 630 "EBLIS," for bomb guidance).

The U.S. Air Force is also interested in the "ATLIS 2" pod to equip the single-seat F-16 aircraft, in service in the United States and in the NATO countries, with laser-guided armament. In Great Britain, British Aerospace is also planning to use the "ATLIS 2" pod for the guidance of the new "Sabre" light air-to-around missile currently being developed. In Germany, the West German Air Force is contemplating the equipment of the Phantom and Tornado fighter-bombers and the Dornier Company is studying the possibility of installing the "ATLIS 2" pod on the Alpha-Jet.

The operational evaluation of the "ATLIS 2" pod in France, which took place between October 1976 and January 1978 at the Cazaux CEV [Flight Test Center] with a Jaguar turned out very satisfactory. It demonstrated that it was in effect possible for an isolated single-seat aircraft pilot with precision to accomplish the designation of laser-guided weapons targets while flying at low altitudes (between 900 and at least 100 m during tests). The pilot has a TV screen to perform the target designation with the help of the TV camera in the pod, connected with a tracking system; then the aim of the laser beam is maintained automatically without the action of

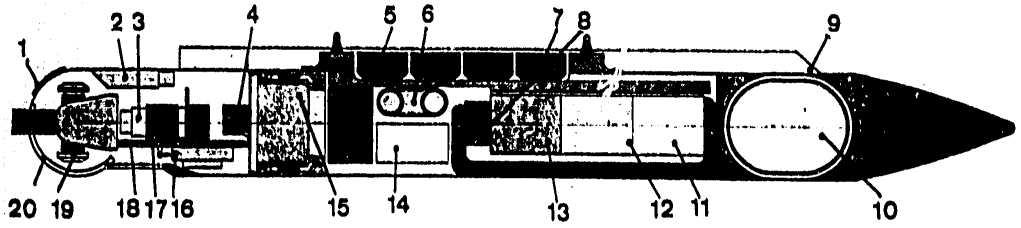
the pilot and regardless of the maneuvers performed by the aircraft. During tests, the pod even made it possible to spot targets through a thin layer of clouds or mist. The in-flight test of the "ATLIS 2" pod on F-16, performed in the United States in July-August 1978, also demonstrated the stability of laser illumination (with the ITAY-1 telemeter-illuminator of CGE [General Electric Company]) and the precision in the guidance of missiles fired (the "GBU 10" and "GBU 16" glide bombs) against targets (tanks, SP guns, etc.), as well as the possibility of switching targets after releasing the missile or attacking a group of between 3 and 6 tanks in a single pass (by means of successive target designation after locking in on the first target). See AIR ET COSMOS, No 643, 675, 738, and 750.

FIGURE APPENDIX

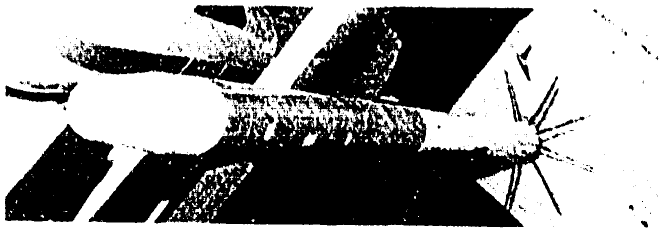


[Photo 1] "ATLIS" laser pod under singleseat Jaguar fighter plane during tests at Cazaux CEV. The "ATLIS 2" pod weighs 125 kg with a length of 2.48 m and a diameter of 0.3 m.

[Photo 2] "AS 30 Laser" missile by Aerospatiale, equipped with "Ariel" automatic laser guidance unit by Thomson-CSF.



[Photo 3] 100-mm Thomson-Brandt rocket equipped with laser-guided warhead.



["ATLIS" laser pod by Thomson-CSF/Martin Marietta] 1--removable sight; 2--forward section control box; 3--TV camera; 4--laser coolant; 5--roll control box; 6--nitrogen supply; 7--electric power supply; 8--aft section control box; 9--aerodynamic casing; 10--freon tank; 11--electronics for servomechanisms; 12--aiming and camera electronics; 13--zone correlator; 14--electric power supply and computer for laser telemeter; 15--wiring box; 16--laser designator; 17--laser receiver; 18--optical support; 19--cardan [joint]; 20--optical dome.

5058
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COUNTRY SECTION FRANCE

NAVY'S USE OF COMPUTER TECHNOLOGY OUTLINED

Paris ARMEES D'AUJOURD'HUI in French Apr 79 pp 22-23

[Article by Lt Com Jean-Paul Guitry and Lt (Senior Grade) Didier Dussud: "Navy--Data-Processing and Operations"]

> [Text] The Navy Command System (SYCOM) and the Naval Tactical Information Exploitation System (SENIT) groups all the facilities designed to furnish to the naval authorities, on land and at sea, the aid necessary for the exercise of their commands, in the most suitable form and in the shortest time periods.

The constantly growing increase in the flow of information, the requirement to reduce reaction times, and the necessity of sorting, correlating and managing a sizeable mass of data justify the use of data-processing in the command centers on land and on board the ships.

Ambitious Objectives

The objective of SYCOM is to enable the chief of staff of the Navy and the chiefs of the Atlantic and Mediterranean theaters of operations to carry out in the best possible way their responsibilites for the preparation and use of forces (training of units, surveillance of the maritime environment, conduct of operations, etc.).

SENIT, the on-board system, is designed for:

--centralizing and processing the information coming from the collection equipment on the vessels and other units of the naval force, so as to work out a general tactical situation;

--to adapt the reaction time of weapons to the adversary's many and increasingly sophisticated means of offense.

SYCOM and SENIT therefore make it possible--on the strategic level, for the first, and on the tactical level for the other--to master as well as possible the decisional parameters necessary for the conduct of maritime operations.

SYCOM

SYCOM is based on a data-processing component articulated around three SEIDAC (Electronic Information and Command Aid System) centers in Paris, Brest and Toulon.

In each center, the system is designed to:

--automate the TELEC [expansion unknown] command posts in such a way as to improve the exploitation of transmissions;

--achieve rapid delivery of messages to their addressees in the general staffs;

--rationalize the storage of messages by facilitating search in a data-processing record file;

--managing the data relating to moving naval units and aircraft, so as to present to the authorities an updated situation based on the latest information;

--to prepare, from these data, comprehensive treatments to aid decision-making.

The system is accessible permanently and remotely, from alphanumeric consoles, by means of a simple language for dialogue between man and machine.

In an initial phase, the Paris center served as an experimental layout and thus made it possible to refine the order for use of this system.

It entered a phase of intensive operational use for the general staff of the Navy in 1977.

The Paris center is organized around an IBM computer of the 370 series and some 30 alphanumeric consoles distributed among the users.

The Brest and Toulon centers are going to be equipped gradually, starting this year, with a "pool" of minicomputers of the SOLAR range.

SENIT

SENIT, which made its first appearance on board a Navy vessel in 1967, has evolved and been perfected constantly to adapt it to the threat and the volume of information exchanges at the level of a naval force, to become an indispensable means of command and action.

SENIT is a system which musters the means in terms of weapons, equipment (detection equipment especially), computers, and the crews of several war vessels in order for the command at all levels, with exact knowledge of what is happening on board their own units and on board other units and in the entire zone, to use their means as effectively as possible.

The information gathered by the various collection equipment (radar, sonar, ECM [Central Meteorological Installation], logs, gyros, etc.) of each unit is put into its computer or computers.

The information coming from the other vessels is received directly into the computers by automatic radio connection.

The computers sort these data or help the operators to sort them and visualize them on consoles (panoramic display of a special type) in the form of symbols whose movement is maintained by the computers.

Furthermore, the existence of computers on board makes it possible to use their capacity to have them do multiple processings which improve the utilization of the vessel's equipment (automatic extraction, interception calculation, etc.), and on certain units these computers for general tactical use replace the specialized weapons computers.

Outlooks and Evolution

As regards SYCOM, many projects are under study. They involve essentially:

--the systems for graphic visualization of the maritime situation on individual console or on a big screen for collective use;

--interoperability among SYCOM's various data bases by means of the Navy Data Transmission Network (RTDM);

--transferability of the logical elements from one computer to another and definition of a language for information exchange between systems (formated messages).

As regards SENIT, in addition to working out the equipment program for future vessels (SENIT 6), the Navy is undertaking:

--development of the SENIT-STRIDA [Air Defense Information Transmission System] interface for the benefit of the Air Force;

--remodelling of the tactical simulation facilities of the Fleet Training Center at Toulon;

--installation on the sea patrol airplanes to come (new generation of Atlantics) of a computerized tactical system, a veritable airborne SENIT.

Naval Tactical Information Exploitation System

SENIT 1

Equips the frigates "Suffren" and "Duquesne" and the cruiser "Colbert," with three UNIVAC computers adapted for the missions of:

--air defense;
--antisubmarine warfare.

SENIT 2

Equips six squadron escorts and is being installed on the aircraft carriers. System with one UNIVAC computer adapted for the air defense missions of a naval force.

SENIT 3

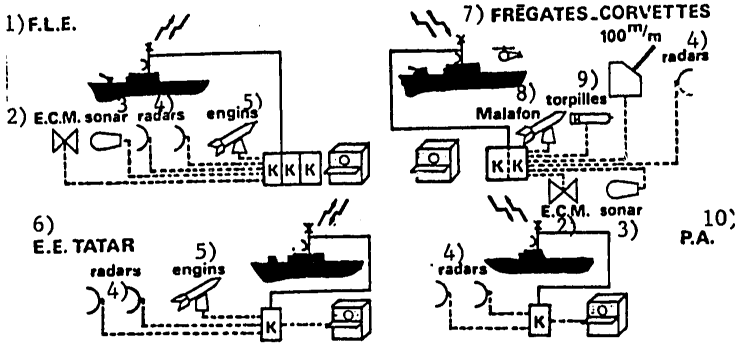
Equips the "Aconit" corvettes and the three F-67 frigates ("Duguay-Trouin," "Tourville," "De Grasse").
System with two UNIVAC computers, adapted for antisubmarine warfare; also makes possible the vessel's air situation management and antiaircraft self-denense. It is characterized by complete integration with the SENIT for weapons systems.

SENIT 4

First entirely French system.
Equips the four ASM [antisubmarine] C-70 corvettes of the "Georges Leygues" type.
System organized around a P2MS (IRIS 55 M) computer adapted for antisubmarine warfare; also makes possible the vessel's air situation management and anti-aircraft self-defense.

SENIT 6

Will equip the future vessels, in the design stage.
System organized around a group of several 15M/125 minicomputers adapted, depending on the version, for antiaircraft action or for antisubmarine warfare.



Key:

1. FLE [expansion unknown]
2. Central Meteorological installation
3. Sonar
4. Radars
5. Missiles
6. "Tatar" squadron escorts
7. Frigates-Corvettes
8. MALAFON missile
9. Torpedoes
10. Aircraft carriers

In the past, the designers of data-processing systems tended to consider the systems they created without reference to the general problem faced by the command.

Any new development of data-processing in the operations area has to be studied in an overall context, despite the specificity of each system. It is necessary to take into account:

--the problems of a psychological nature which it poses to the users;

--the technical obstacles connected with the development of shared data-processing (pool of minicomputers, remote data-processing);

--the necessity to foresee, in the design stage, the exchange of information among the different systems (SYCOM, SENIT, SYSIC [expansion unknown], STRIDA, etc.).

The experience acquired by the Navy by means of SENIT, and to a lesser degree by means of SYCOM, makes it possible to expect that "data-processing" and "operations" will be associated more and more closely in order to meet the growing needs of the armed forces.

11267
CSO: 3100

COUNTRY SECTION FRANCE

BIOGRAPHICAL INFORMATION ON NEW GENDARMERIE DIRECTOR

Paris ARMEES D'AUJOURD'HUI in French Apr 79 p 14

[Article: "Charles Barbeau, Master of Petitions in the Council of State, Has Assumed His Duties as Director of the Gendarmerie"]

[Text] A magistrate from the high-level administrative jurisdiction, the Council of State, has just been placed at the head of the gendarmerie.

Mr Charles Barbeau, new director of the branch, is master of petitions in the Council of State. Like all his colleagues of his generation, and in line with the long tradition of the Council of State, Mr Barbeau has acquired broad administrative experience.

Former ENA Student

After studying at the National School of Administration (ENA), 1958-1960, Mr Barbeau was named auditor in the Council of State in 1960. Then, as was required at that time, he was placed at the disposal of an administrative department, the general secretariat for Algerian affairs, until 1961.

Auditor in the Council of State

At that time, Barbeau assumed his duties as auditor in the Council of State, where he was assigned to the contested cases section, then to the finance section, for more than 3 years. At the end of 1964, Barbeau was lent on assignment to the International Labor Office in Geneva as an adviser, then as manager of the staff of the director general of that organization, where he reamined for 5 years.

Master of Petitions in the Council of State

In 1967, Barbeau was named master of petitions in the Council of State, which he rejoined in June 1969 and where he served until 1971, when he was named technical adviser to the staff of the minister of labor, and then director of employment, population and migration in the Ministry of Labor. He kept these duties until 1974.

From 1974 to 1976, Barbeau was lent on assignment from the Council of State to the prefectural administration to be prefect of the Correze, and then, in 1976, director of contested cases and regulation, before rejoining the Council of State.

He was named director of the gendarmerie and military justice on 27 February 1979.

His Civilian and Military Titles

Mr Barbeau, 46 (he was born in Valence on 23 December 1932), master of petitions in the Council of State, is a master of arts, a graduate of the Institute of Political Studies, and a former student in the ENA.

Barbeau, an honorary reserve lieutenant and a former auditor IHEDN [Institue of Higher Studies in National Defense], is a chevalier of the Legion of Honor and a chevalier of the Order of Merit.

11267
CSO: 3100

NEED FOR HIGH SUSTAINED GROWTH RATE EMPHASIZED

Madrid CAMBIO 16 in Spanish 1 Apr 79 pp 52, 53

[Article: "Spain, Europe's Caboose"]

[Text] If the Spanish economy grows twice as fast as the European economy, in 30 years this will be Sweden. But if we do not grow like the Japanese, the next generations will be condemned to figure among Europe's poorest relatives.

Last year, upon analyzing the prospects of the Spanish economy for the coming decade, Pro Enrique Fuentes Quintana, economic vice president of the government, said that "This country has to do three things in the coming years: first, grow; second, grow; and third, grow."

A Miracle in Progress

Crisanto Plaza, general director for political economy, recently stated in these pages that it is going to be very difficult to decrease unemployment "unless we grow very rapidly in the coming years." "In 1978, Plaza adds, we have grown 3 percent and for the two-year period 1981-82 we will have to grow 5 and 6 percent."

A recent study of the Center for Economic Research and Communication assures that only an annual 6-percent growth rate of the gross national product (GNP) can guarantee the incorporation of Spain in Europe. If this goal cannot be reached, it adds, Spain will have consolidated its position as a backward country with respect to the Europe of the year 2000.

In 25 years, from 1950 to 1975, Spain performed what has been called "the economic miracle": having a standard of living three times below that of industrial Europe, it reduced this distance from two to one. In that period England did not fail to yield ground with respect to its European business and those south of Europe, while Italy lost position in the sixties. The great winners in this battle for development have been FRG, above all, and France.

To Quicken the Pace

During these 25 years Spain grew an average of 5.6 percent annually. The study of the Center for Economic Research and Communication points out that, were this pace to be sustained, this country would find itself in the year 2000 at a development level of 100, while industrial Europe would have reached a level of 121. Thus, it is a paper chase. It is essential to quicken the pace.

Elsewhere a group of experts of the British weekly THE ECONOMIST has agreed there is need for growing very spectacularly in order to overcome the distances that keep us away from Europe: if Sweden were to grow 3 percent annually and Spain 7 percent, we would still need 30 years to equate our per capita income with that of the Swedish.

Why did some countries grow more than others in the last few decades? Or, what are the factors that make a country grow? "It can be said that the countries with a greater rate of growth have been those with a greater percentage of investments," answers the book "The Economies of Europe," which will be published soon by the Bank of Biscay and has been written in collaboration with THE ECONOMIST.

Japan, second among the countries that grew most, percentagewise, during the last 15 years, devotes more to productive investments (factories and machinery) than any country in Western Europe, a 30 percent of its GNP. At the other end, with only 9.7 percent investments, we find England one of the countries whose growth fell sharply in this period.

Exporting, Basic Factor

The work adds that other factors which are difficult to quantify must be taken into account, factors such as technical progress and the level of education. In addition it considers that a basic factor of growth has been opening big markets, the possibility for some countries to strongly develop their exports.

It is enough to see that the countries ranking at the top of the list of countries that grew the most (Iran, Singapore, Korea, Saudi Arabia, Formosa, Lesotho...) are not exactly the greatest industrial powers, but a series of slightly developed countries which appear as paradises for foreign investors and which can export very must at very competitive prices due to the low cost of labor.

In addition to being a central objective, growth can become an economic danger. Loosening up the economy, reactivating it and investing, fosters the creation of new jobs but also domestic and foreign demand.

Consequently, the system generates inflation and, increasing imports and reducing exports, also produces a deficit in the balance of payments. This produces growth but, at the same time, aggravates two of the three classic flaws of the Spanish economy.

Difficult Balance

For that reason the experts, while stating the need for growing more than Europe in the coming years, are stressing the need to carry out a strong anti-inflationary policy and increase exports as much as possible. Spain's opportunity to stop being a country in the process of development in the remainder of this century and enter the orbit of the most developed countries of Earth hinges upon this difficult balance.

9341
CSO: 3110

PUBLIC DEBT REPORTEDLY TO BE INCREASED

Madrid CAMBIO 16 in Spanish 8 Apr 79 p 54

[Article: The State Looks for Money]

[Text] When the new Cortes approve the budgets for 1979--that were presented last October and could reach parliamentary procedures in May--the Ministry of Finance must find 70 billion pesetas to cancel the budget deficit anticipated for 1979. This will be done by increasing the public debt as is usually done by most countries in order to balance their expenditures and their public income.

In order to obtain these 70 billions we have two alternatives: to use the State's prepotency and obtain this money through the banks' and savings institutions' obligatory investment quotas or to resort to the market in order to obtain resources in competition with the private sector. We believe that this is the most coherent solution with the economic model being proposed and, in principle, we do not intend to fall back on the institutional savings," a high official of the Ministry of Economy explained to CAMBIO 16.

In banking and stock exchange circles it has been speculated recently that there is a possibility of this public debt being issued at a high rate of interest, there being a certain worry of it being around 11 percent.

Today the obligations of some enterprises are paying an average of 14 to 15 percent in 5 years and bank bonds at 13 percent. The more the public debt approaches this, the more it will press for a general rise in interest rates, since the private sector must compensate with interest its lower security respecting State issues. In addition, the experts that have been consulted point out that high interest of the public debt would make the bank's resources more expensive and, by the same token, money, with disastrous effects upon the viability of small and medium-size enterprises, as well as overall investments.

"What must worry the financial circles is not only the interest rates that will be set, but also the amount, the 70 billions that must be issued in order to cancel the budget deficit, because this issue will mean withdrawing 70 billions from the market, thus having less money in circulation and

making credit more expensive," one of those responsible for the future issue told CAMBIO 16. According to this high administration official, the rate of interest has not been discussed yet and the subject is still under study, "though it is sure to be below market rates." In any case, he insists, setting the terms is as important as setting the interest rates: the longer the time before money is returned to the saver, the higher the interest must be.

Against the Clock

The government as well as the private experts consulted by this magazine seem to agree that the basic problem of the issue are the 70 billions, but that there is no better alternative. "We could resort to the Bank of Spain and turn on the money machine, but this would be artificially increasing the resources and would only create inflation, cutting back on credit even more," explains a government expert.

If there is agreement that increasing the public debt is the most orthodox way of canceling the budget deficit, controversy still remains about the interest rate. "We must set an interest rate that is attractive and at the same time does not constitute unfair competition for the private sector," points out one of those responsible for the future issuance. "But time is against us: it is not the same thing to obtain 70 billions in January as it is in May or June. The more it is delayed (due to budget approval), the more difficult it becomes and forces us to provide better terms because our obligation, derived from parliament, is to obtain those 70 billion pesetas one way or another before December."

PUBLIC DEBT PLACED THROUGH THE EXCHANGE

Date	Issuance	Amount (billion pesetas)	Interest Rate %	Terms	Function
January 1978	Non-convertible INI obligations	30	11	17 years (redeemable from the third year)	National Institute for Industry
June 1978	State public debt	10	9.5	5 years	Education
1978	Mortgage bank securities	5	12	15 years (redeemable from the third year)	Housing
1978	1978 Villas edition of the Madrid Town Hall	4.3	11.5	10 years (redeemable from the third year)	Madrid Town Hall
November 1978	Redeemable public debt	30	10.25	5 years	Education
January 1979	State debt, domestic and redeemable	24.8	6.5	10 years (redeemable at maturity)	Siderurgical and naval sectors

END

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